

CLAIMS

What is claimed is:

1. An apparatus for use in more effectively placing perforations in a wellbore comprising:

an elongated housing formed for axial insertion into said wellbore;

one or more shaped charges disposed within said housing;

an indicator mechanism created from a deformable material secured within said elongated housing, said indicator mechanism formed to comprise an annulus formed within, said annulus having an inner surface and an outer surface forming opposing sides and having an axis parallel to the elongated housing axis; and

an indicator element disposed and freely moveable within said annulus, such that upon rotation of said elongated housing said indicator element responds to gravitational forces and moves along the annulus to a location closest to the source of the gravitational forces, and upon sufficient convergence of said opposing sides, said indicator element is squeezed between said opposing sides and is locked into a stationary position.

2. The apparatus of claim 1 wherein said stationary position is the lowest location within said annulus.

3. The apparatus of claim 1 further comprising a mark within said annulus coinciding with the calculated annulus low point, where the angular difference between the line connecting the

where shown
; described

1 ~~Sub A5~~ mark to the axis of said housing and the line connecting the stationary point to the axis of
2 said housing equals the actual orientation displacement.

3 4. The apparatus of claim 1 where said inner surface and said outer surface are parallel to the
4 axis of said annulus.

5 5. The apparatus of claim 1 further comprising a detonation cord inside the inner surface of said
6 annulus.

7 6. The apparatus of claim 5 where detonation of the detonation cord deforms the inner surface
8 of said annulus toward the outer surface of said annulus thereby locking said indication
9 device in the stationary position.

10 7. The apparatus of claim 1, wherein said indicator element is substantially spherical.

11 8. The apparatus of claim 1, wherein said indicator element is substantially cylindrical.

12 9. The apparatus of claim 1 further comprising a means for converging the opposing sides of
13 said annulus.

14 ~~Sub A5~~ 10. A method of indicating a perforating gun shot direction comprising the steps of:

15 forming an indicator housing having an annulus produced within with an inner surface and
16 an outer surface that form opposing sides;

17 adapting an indicator element to pass freely along said annulus;

18 disposing said indicator element within said annulus;

1 ~~securing said indicator housing within a perforating gun having shaped charges such that the~~
2 ~~axis of said annulus is parallel to the longitudinal axis of the perforating gun;~~

3 inserting the perforating gun within a wellbore to a location where the shaped charges are to
4 be detonated;

5 detonating the shaped charges while simultaneously converging the opposing sides of said
6 annulus against said indicator element and locking the indicator element into a stationary position;

7 examining the location of the stationary position with respect to the perforating gun and the
8 shaped charges; and

9 determining the orientation of the perforating gun at the time the shaped charges were
10 detonated based on the location of the stationary position.